



# 이벤트 핸들러

# 구성 내용

- 이벤트 처리
- 위젯 활용
- 토스트
- 터치 이벤트



# 이벤트 처리



## ○ 그래픽 사용자 인터페이스 처리 방식

### ◉ 폴링 방식

- 애플리케이션이 무한 루프를 돌면서 사용자의 입력을 기다린다.
- CPU의 파워를 낭비

### ◉ 이벤트 구동방식

- 애플리케이션이 다른 작업을 하고 있다가 사용자의 입력이 발생하면 이벤트가 발생되고 애플리케이션은 이 이벤트를 처리
- 안드로이드는 이벤트 처리 방식



# 이벤트 처리



사용자가 키를 누르면 호출된다.



```
class MyView extends View  
{  
    ...  
    boolean onKeyDown()  
    {  
        ...  
    }  
    ...  
}
```



# 재정의 할 수 있는 콜백 메소드



- **onKeyDown(int, KeyEvent)**
  - ◎ 사용자가 키보드를 눌렀을 때 호출
- **onKeyUp(int, KeyEvent)**
  - ◎ 사용자가 키에서 손을 뗐을 때 호출
- **onTouchEvent(MotionEvent)**
  - ◎ 사용자가 화면을 터치했을 때 호출
- **onFocusChanged(boolean, int, Rect)**
  - ◎ 뷰가 키보드 포커스를 얻거나 잃었을 경우에 호출



# 리스너



- 콜백 메소드들이 정의된 인터페이스는 뷰 클래스 내부에 정의 됨
- 뷰 클래스 내부에 정의된 인터페이스를 **이벤트 리스너** 함.
- View 클래스 안에 정의된 리스너

리스너	콜백 소드	설명
View.OnClickListener	onClick()	사용자가 어떤 항목을 터치하거나 내비게이션 키나 트랙볼로 항목으로 이동한 후에 엔터키를 눌러서 선택하면 호출
View.OnLongClickListener	onLongClick()	사용자가 항목을 터치하여서 일정 시간 동안 그대로 누르고 있으면 발생
View.OnFocusChangeListener	onFocusChange()	사용자가 하나의 항목에서 다른 항목으로 포커스를 이동할 때 호출
View.OnKeyListener	onKey()	포커스를 가지고 있는 항목 위에서 키를 눌렀다가 놓았을 때 호출
View.OnTouchListener	onTouch()	사용자가 터치 이벤트로 간주되는 동작을 했을 경우에 호출
View.OnCreateContextMenuListener	onCreateContextMenu()	컨텍스트 메뉴가 구축되어 있는 경우에 호출



# 리스너 객체를 생성

- 1) 리스너 클래스를 **내부 클래스**로 정의
- 2) 리스너 클래스를 **무명 클래스**로 정의
- 3) 리스너 인터페이스를 액티비티 클래스에 구현
  - ◎ 안드로이드에서 무명 클래스를 사용하는 방법이 가장 많이 사용



# 내부 클래스로 처리하는 방법



Application name: **InnerClassBtn**

Company Domain: admid.example.com

Project location: C:\Android\StdWork\InnerClassBtn

Target Android Devices

- Phone and Tabet
- Minimun SDK API 15 : Android 4.0.3

내부 클래스: 클래스 안에  
정의된 클래스를 의미

Add an activity to Mobile : **Empty Activity**

Customize the Activity

Activity Name: **MainActivity**

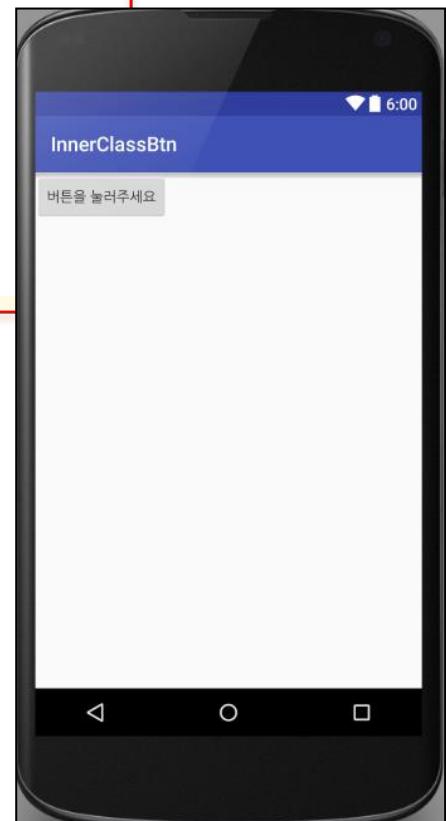
Layout Name: **activity\_main**



# 내부 클래스로 처리하는 방법

```
activity_main.xml x
1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:tools="http://schemas.android.com/tools"
4     android:layout_width="match_parent"
5     android:layout_height="match_parent"
6     >
7     <Button
8         android:id="@+id	btn01"
9         android:layout_width="wrap_content"
10        android:layout_height="wrap_content"
11        android:text="버튼을 눌러주세요" />
12 </LinearLayout>
```

코딩

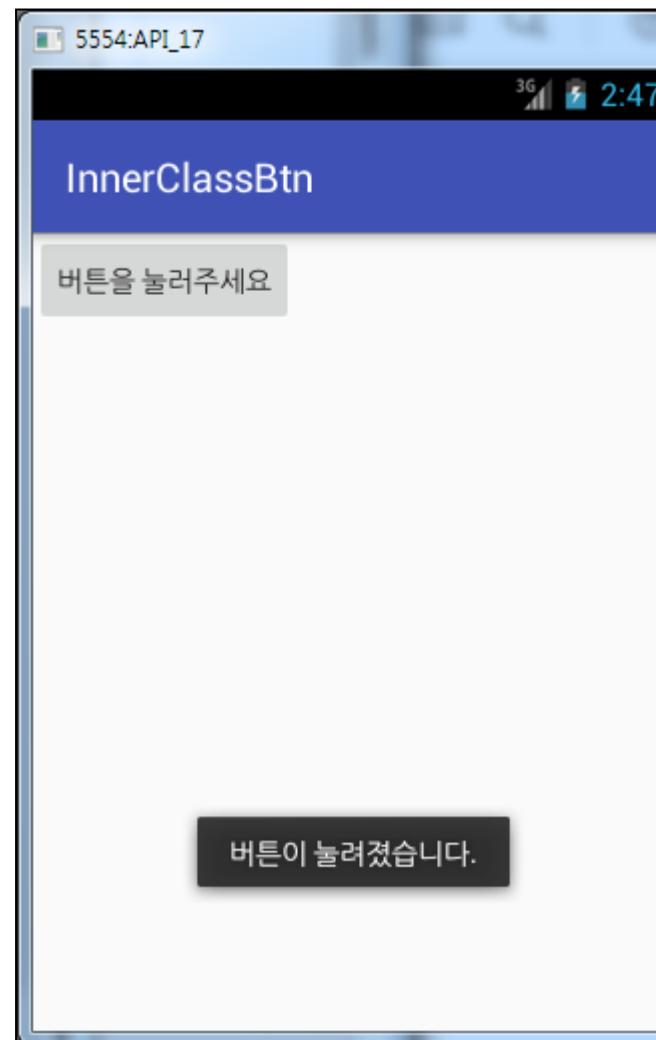
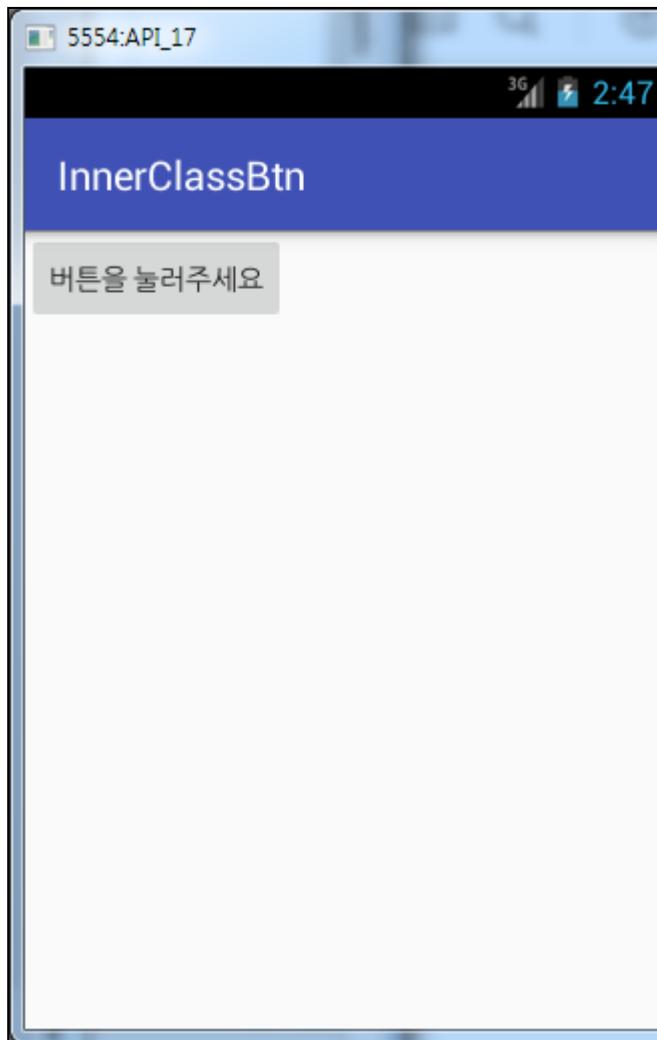


MainActivity.java x

```
1 package com.example.administrator.innerclassbtn;
2 import ...
7 public class MainActivity extends AppCompatActivity {
8
9     class MyListenerClass implements View.OnClickListener {
10        @Override
11        public void onClick(View v) {
12            Toast.makeText(getApplicationContext(), "버튼이 눌려졌습니다.",
13            Toast.LENGTH_SHORT).show();
14        }
15    }
16    @Override
17    protected void onCreate(Bundle savedInstanceState) {
18        super.onCreate(savedInstanceState);
19        setContentView(R.layout.activity_main);
20        Button button = (Button)findViewById(R.id.btn01);
21        MyListenerClass buttonListener = new MyListenerClass();
22        button.setOnClickListener(buttonListener);
23    }
24 }
```

코딩

코딩



# 무명 클래스로 처리하는 방법

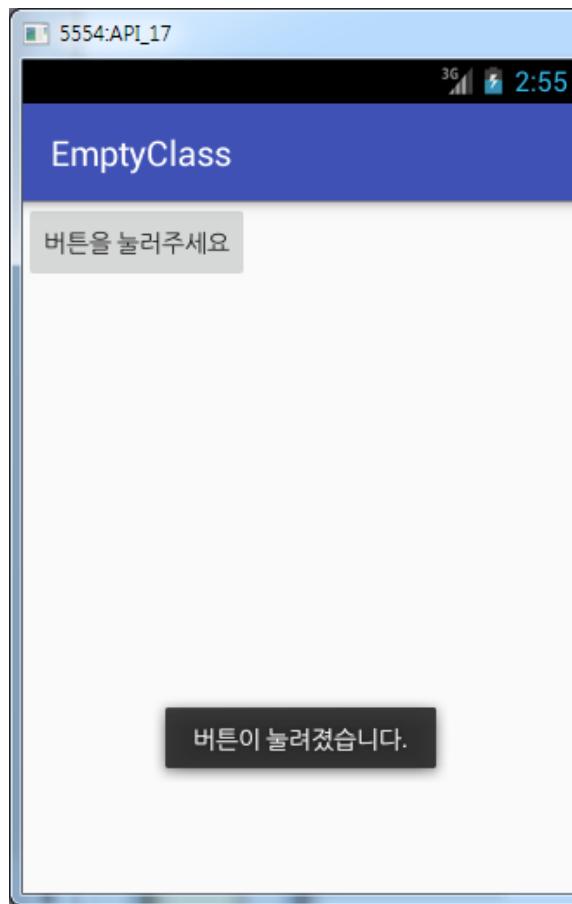
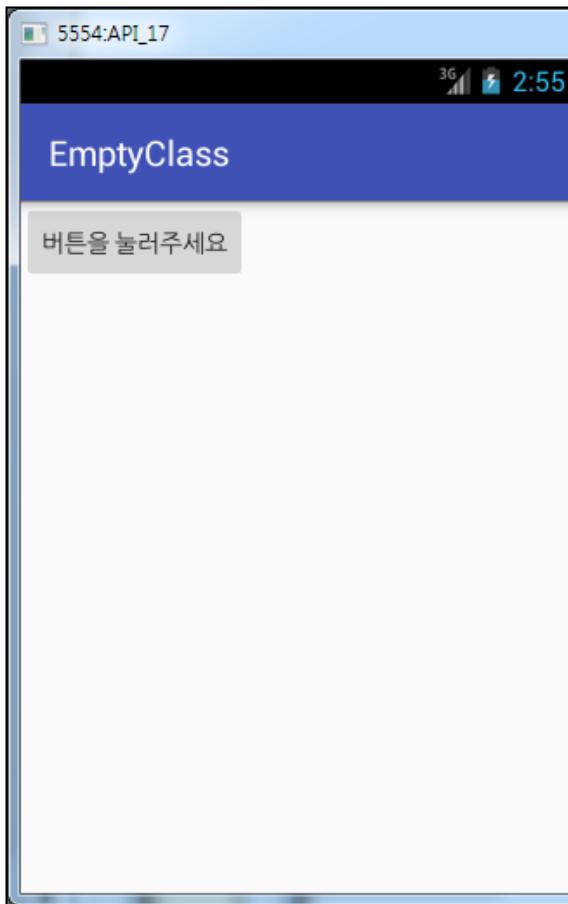
이벤트를 처리하는 클래스를 무명으로 만들어 사용

EmptyClass.java

```

1 package com.example.administrator.innerclassbtn;
2 import ...
3
4
5 public class EmptyClass extends AppCompatActivity {
6
7
8     @Override
9
10    protected void onCreate(Bundle savedInstanceState) {
11        super.onCreate(savedInstanceState);
12        setContentView(R.layout.activity_main);
13
14
15        Button button = (Button)findViewById(R.id.btn01);
16        button.setOnClickListener(new View.OnClickListener() {
17            @Override
18            public void onClick(View v) {
19                Toast.makeText(getApplicationContext(), "버튼이 눌렸습니다.",
20                                Toast.LENGTH_SHORT).show();
21            }
22        });
23    }
24 }
```

코딩



## 무명 클래스

- 클래스 몸체는 정의되지만 **이름이 없는 클래스**
- 무명 클래스는 클래스를 정의하면서 동시에 객체를 생성
- 무명 클래스는 이름이 없기 때문에 **한 번만 사용이 가능**
- 무명 클래스는 코드의 양을 줄일 수 있다.

# 액티비티에 인터페이스를 구현하는 방법

ActivityInterfaceClass.java \*

```

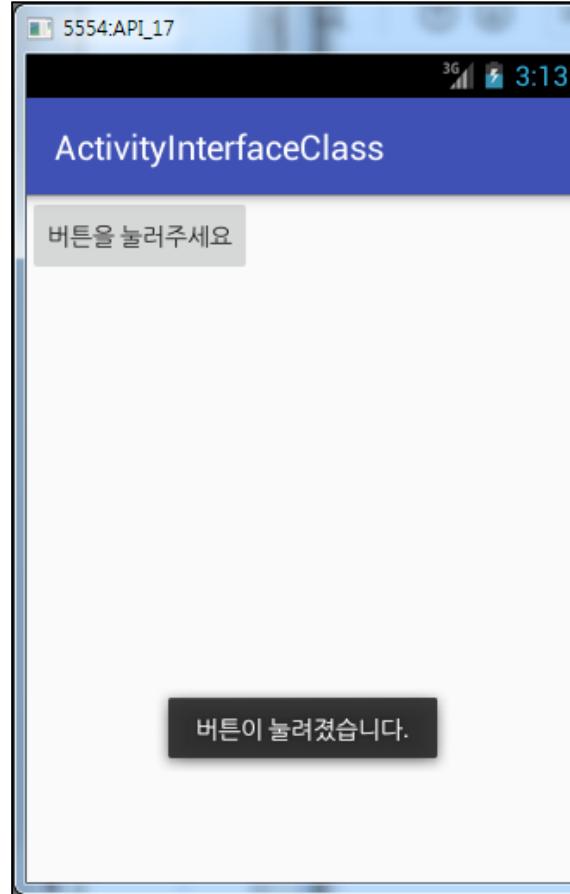
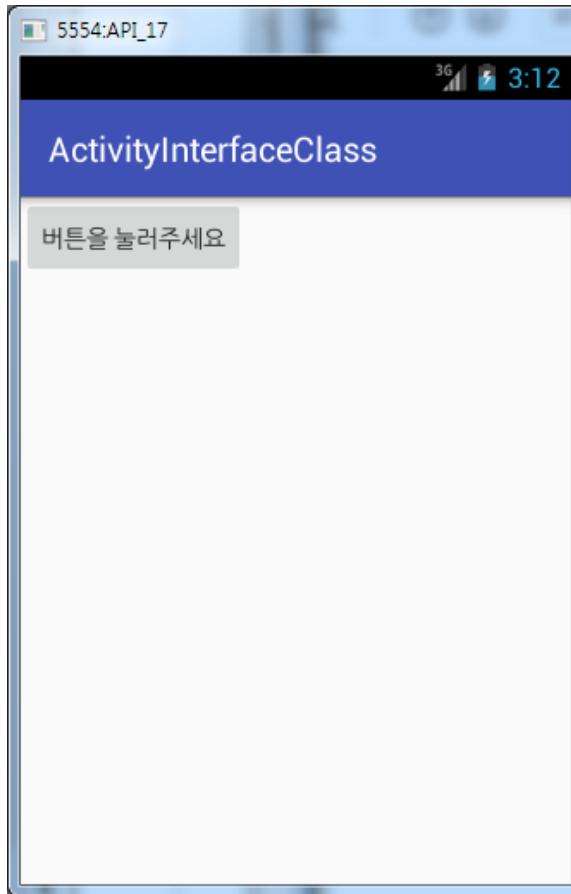
1 package com.example.administrator.innerclassbtn;
2
3 import android.os.Bundle;
4 import android.support.v7.app.AppCompatActivity;
5 import android.view.View;
6 import android.widget.Button;
7 import android.widget.Toast;
8
9 public class ActivityInterfaceClass extends AppCompatActivity implements View.OnClickListener {
10
11     @Override
12     protected void onCreate(Bundle savedInstanceState) {
13         super.onCreate(savedInstanceState);
14         setContentView(R.layout.activity_main);
15
16         Button button = (Button) findViewById(R.id.btn01);
17         button.setOnClickListener(this);
18     }
19
20     public void onClick(View v) {
21         Toast.makeText(getApplicationContext(), "버튼이 눌려졌습니다.",
22             Toast.LENGTH_SHORT).show();
23     }
24 }
```

액티비티 클래스에 리스너  
인터페이스를 구현

코딩

버튼의 클릭 이벤트를 현  
재의 액티비티가 처리하겠  
다고 버튼에 등록

버튼이 클릭되면  
이 메소드 호출



# 토스트

- **토스트 개요**

- 화면에 잠깐 나타났다 사라지는 메시지
- 사용자가 인식해야 할 작은 메시지를 줄 때 편리
- 프로그래머가 디버깅 용도로 사용하기에도 적당

❖ **일반적인 형태**

```
Toast.makeText(Context context, String message, int duration).show();
```

대상지정(현재화면)

내용

화면에 나타내는 시간

Toast.LENGTH\_LONG  
Toast.LENGTH\_SHORT

❖ **토스트의 위치 변경(기본은 중앙 하단 부)**

```
Toast.setGravity(int gravity, int x0ffset, int y0ffset);
```

위치(위쪽,중앙,아래)

떨어진 거리(x,y)

# 프로젝트 생성



Application name: [WindowToast](#)

Company Domain: admid.example.com

Project location: C:AndroidStdWorkWindowToast

Target Android Devices

- Phone and Tabet

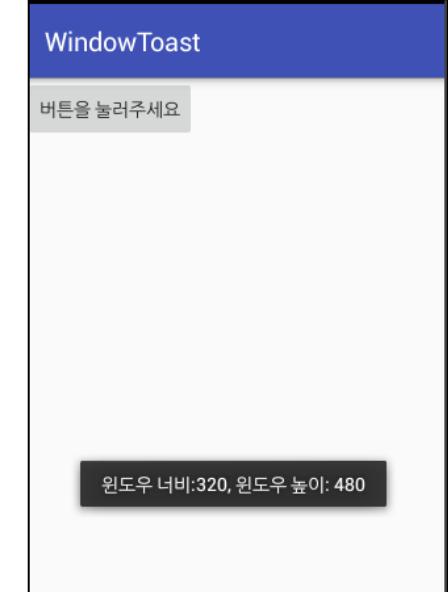
- Minimun SDK API 15 : Android 4.0.3

Add an activity to Mobile : [Empty Activity](#)

Customize the Activity

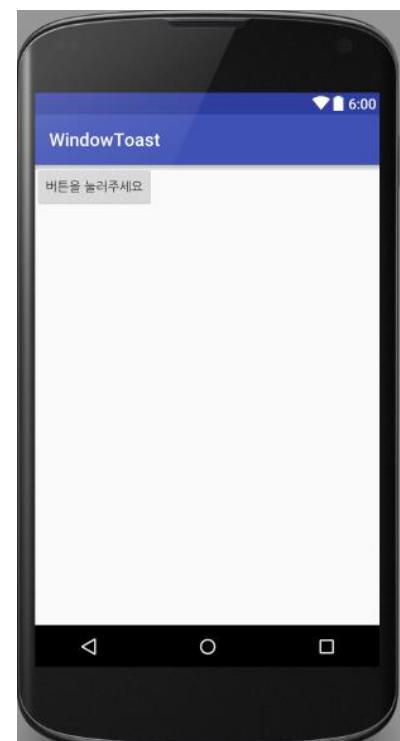
Activity Name: [MainActivity](#)

Layout Name: [activity\\_main](#)



```
activity_main.xml x  
1 <?xml version="1.0" encoding="utf-8"?>  
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
3     xmlns:tools="http://schemas.android.com/tools"  
4     android:layout_width="match_parent"  
5     android:layout_height="match_parent"  
6     android:orientation="vertical">  
7  
8     <Button  
9         android:layout_width="wrap_content"  
10        android:layout_height="wrap_content"  
11        android:id = "@+id/button"  
12        android:text="버튼을 눌러주세요" />  
13 </LinearLayout>
```

## 1. 코딩



MainActivity.java x

```

1 package com.example.admin.windowtoast;
2
3 import android.os.Bundle;
4 import android.support.v7.app.AppCompatActivity;
5 import android.view.Display;
6 import android.view.View;
7 import android.view.WindowManager;
8 import android.widget.Button;
9 import android.widget.Toast;

```

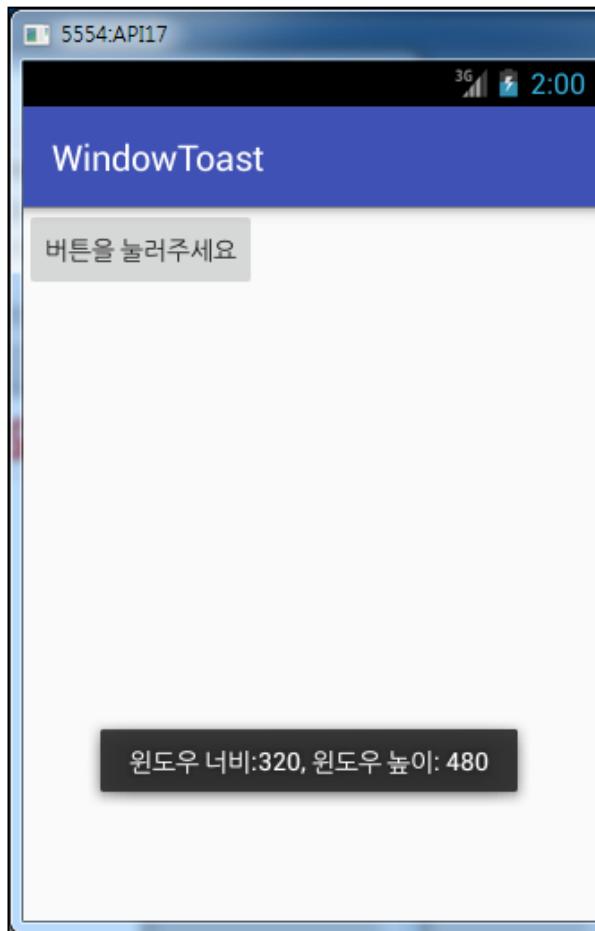
## 2. 코딩

MainActivity.java x

```

10
11 public class MainActivity extends AppCompatActivity {
12
13     Button button;
14
15     @Override
16     protected void onCreate(Bundle savedInstanceState) {
17         super.onCreate(savedInstanceState);
18         setContentView(R.layout.activity_main);
19
20         button = (Button) findViewById(R.id.button);
21         button.setOnClickListener(new View.OnClickListener() {
22             @Override
23             public void onClick(View v) {
24                 Display display = ((WindowManager) getSystemService(WINDOW_SERVICE))
25                     .getDefaultDisplay();
26                 Toast.makeText(getApplicationContext(), "윈도우 너비:" + display.getWidth()
27                     + ", 윈도우 높이: " + display.getHeight(), Toast.LENGTH_LONG).show();
28             }
29         });
30     }
31 }

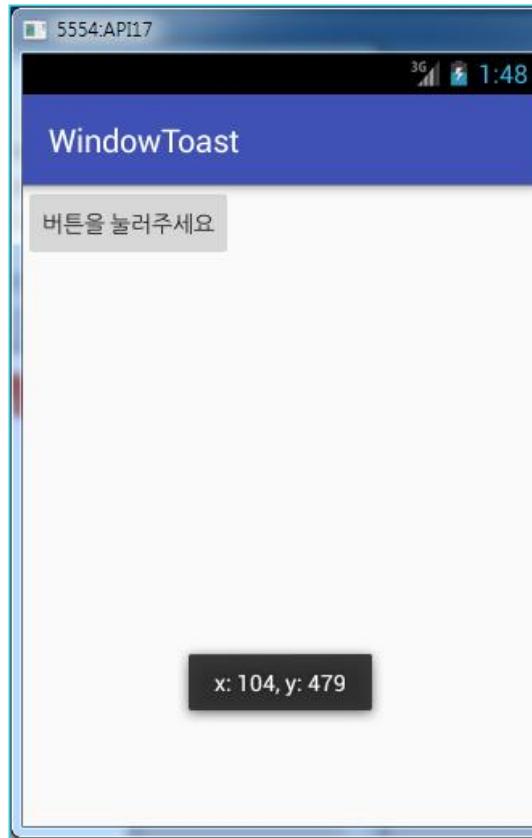
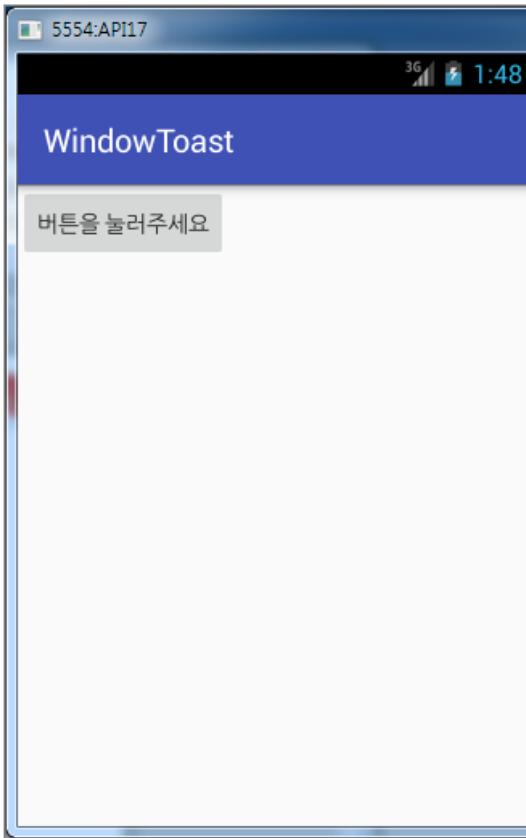
```



```
>MainActivity.java x
1 package com.example.admin.windowtoast;
2
3 import android.os.Bundle;
4 import android.support.v7.app.AppCompatActivity;
5 import android.view.Display;
6 import android.view.View;
7 import android.view.WindowManager;
8 import android.widget.Button;
9 import android.widget.Toast;
10
11 public class MainActivity extends AppCompatActivity {
```

3. 코딩

```
>MainActivity.java x
10
11 public class MainActivity extends AppCompatActivity {
12
13     Button button;
14
15     @Override
16     protected void onCreate(Bundle savedInstanceState) {
17         super.onCreate(savedInstanceState);
18         setContentView(R.layout.activity_main);
19
20         button = (Button) findViewById(R.id.button);
21         button.setOnClickListener(new View.OnClickListener() {
22             @Override
23             public void onClick(View v) {
24                 Display display = ((WindowManager) getSystemService(WINDOW_SERVICE))
25                     .getDefaultDisplay();
26                 int xOffset = (int) (Math.random() * display.getWidth());
27                 int yOffset = (int) (Math.random() * display.getHeight());
28                 Toast.makeText(getApplicationContext(), "x: " + xOffset +
29                         ", y: " + yOffset, Toast.LENGTH_SHORT).show();
30             }
31         });
32     }
33 }
34 }
```



```

MainActivity.java ×

16
17  ↗ protected void onCreate(Bundle savedInstanceState) {
18      super.onCreate(savedInstanceState);
19      setContentView(R.layout.activity_main);

20
21      button = (Button)findViewById(R.id.button);
22      button.setOnClickListener(new View.OnClickListener() {
23          @Override
24          ↗ public void onClick(View v) {
25              Display display = ((WindowManager) getSystemService(WINDOW_SERVICE))
26                  .getDefaultDisplay();
27              int xOffset = (int) (Math.random() * display.getWidth());
28              int yOffset = (int) (Math.random() * display.getHeight());
29              Toast tMsg = Toast.makeText(getApplicationContext(), "토스트 연습",
30                  Toast.LENGTH_LONG);
31              tMsg.setGravity(Gravity.TOP | Gravity.LEFT, xOffset, yOffset);
32              tMsg.show();
33          }
34      });
35  }
36

```

4. 코딩

왼쪽 위로부터 offset 만큼  
위치에 출력

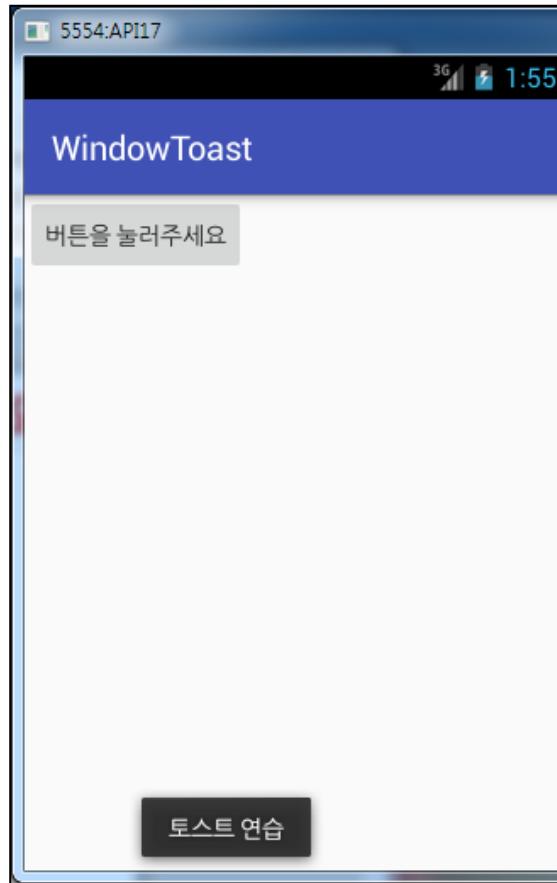
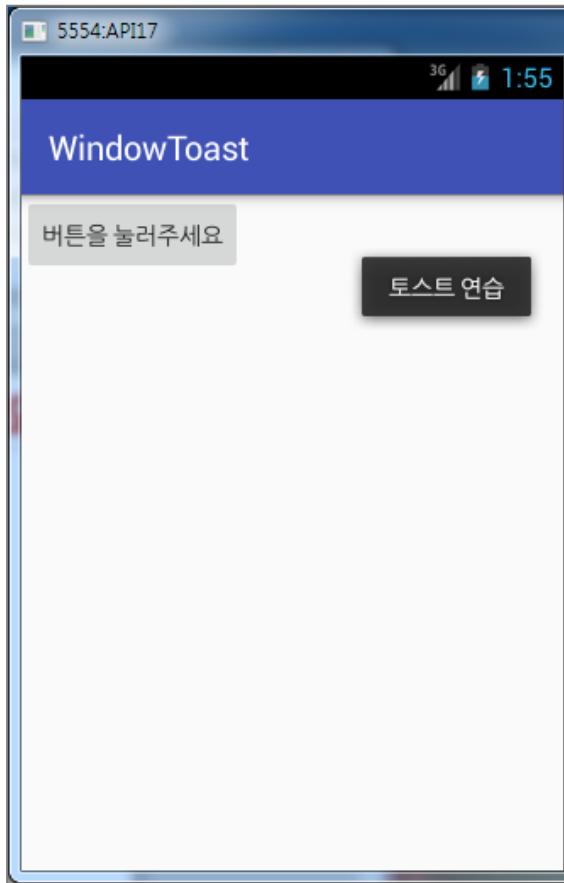
```

C MainActivity.java ×
16
17     override
18     protected void onCreate(Bundle savedInstanceState) {
19         super.onCreate(savedInstanceState);
20         setContentView(R.layout.activity_main);
21         Button button = (Button) findViewById(R.id.button);
22         button.setOnClickListener(new View.OnClickListener() {
23             @Override
24             public void onClick(View v) {
25                 Display display = ((WindowManager) getSystemService(WINDOW_SERVICE))
26                     .getDefaultDisplay();
27                 int xOffset = (int) (Math.random() * display.getWidth());
28                 int yOffset = (int) (Math.random() * display.getHeight());
29                 Toast tMsg = Toast.makeText(getApplicationContext(), "토스트 연습",
30                     Toast.LENGTH_LONG);
31                 tMsg.setGravity(Gravity.TOP | Gravity.LEFT, xOffset, yOffset);
32                 tMsg.show();
33             }
34         });
35     }
36 }

```

보여라

화면의 왼쪽 위로부터  
xoffset, yOffset 위치화면 폭의 크기(320) \*  
random 값(0.???)



# XML을 이용한 이벤트 처리

- XML을 이용한 버튼 이벤트 처리
- 버튼이 정의된 XML 파일에서 속성 onClick에 이벤트를 처리를 처리하는 메소드 이름을 설정

Application name: [ButtonXMLEvent](#)

Company Domain: admid.example.com

Project location: [C:\Android\StdWork\ButtonXMLEvent](#)

Target Android Devices

- [Phone and Tabet](#)

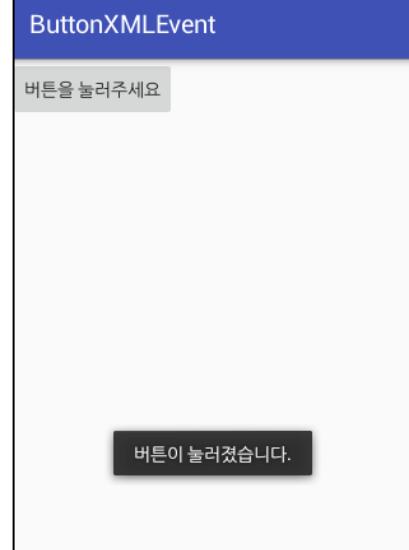
- [Minimun SDK API 15 : Android 4.0.3](#)

Add an activity to Mobile : [Empty Activity](#)

Customize the Activity

Activity Name: [MainActivity](#)

Layout Name: [activity\\_main](#)

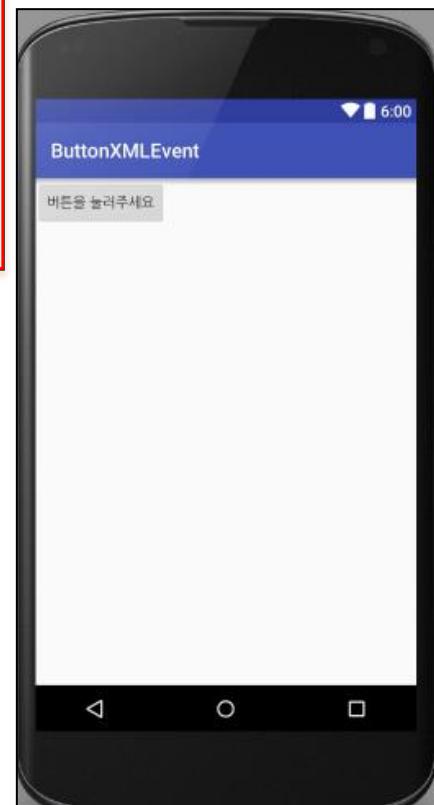


activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="버튼을 눌러주세요"
        android:onClick="myClickListener"/>
</LinearLayout>
```

코딩



```
>MainActivity.java x  
1 package com.example.admin.buttonxml.event;  
2  
3 import android.os.Bundle;  
4 import android.support.v7.app.AppCompatActivity;  
5 import android.view.View;  
6 import android.widget.Toast;  
7  
8 public class MainActivity extends AppCompatActivity {  
9  
10    @Override  
11    protected void onCreate(Bundle savedInstanceState) {  
12        super.onCreate(savedInstanceState);  
13        setContentView(R.layout.activity_main);  
14    }  
15  
16    public void myClickListener(View target) {  
17        Toast.makeText(getApplicationContext(), "버튼이 눌러졌습니다."  
18            , Toast.LENGTH_LONG).show();  
19    }  
20 }
```

코딩



# 위젯 활용



## ○ 체크박스 XML과 Java 코드 작성 3단계

### CheckBox의 XML 코드

```

1 <CheckBox
2     android:id="@+id/android"
3     android:text="안드로이드폰"
4     android:checked="true"/>
5 <CheckBox
6     android:id="@+id/iphone"
7     android:text="아이폰" />
8 <CheckBox
9     android:id="@+id/window"
10    android:text="윈도폰"
11    android:checked="true" />
```

### ① 체크박스 변수 선언

CheckBox mycheck;

### ② 변수에 체크박스 위젯 대입

mycheck = (CheckBox) findViewById(R.id.android);

### ③ 체크박스가 변경될 때 동작하는 클래스 정의

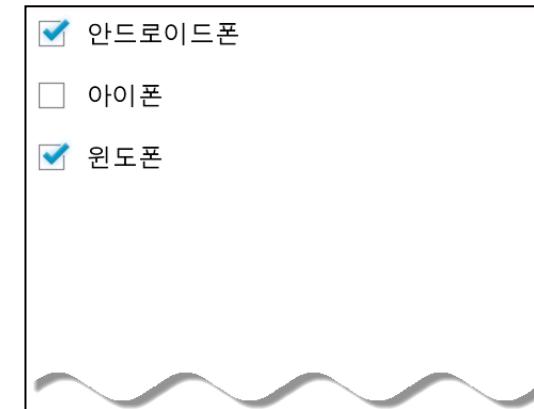
```

mycheck.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {
    public void onCheckedChanged(CompoundButton arg0, boolean arg1) {
        // 이 부분에 동작할 내용을 코딩
    }
});
```

# 체크 박스



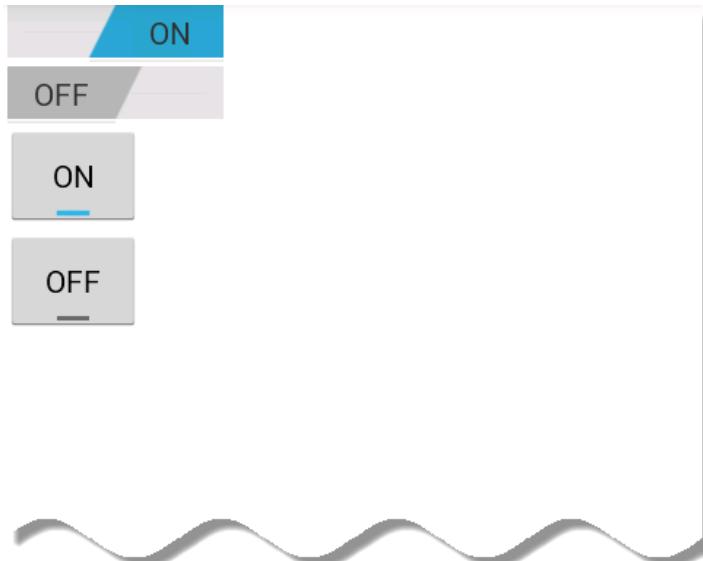
- ◉ 클릭할 때마다 상태가 체크와 언체크로 변화
- ◉ 체크 박스가 독립적으로 동작
- ◉ 여러 개의 동시 체크 가능
- ◉ Java 코드에서 컨트롤
  - `setChecked()` : 강제로 체크를 켜거나 끈다.
  - `isChecked()`: 체크가 되었는지를 확인
  - `toggle()`: 체크 상태를 반대로 바꿔준다.
  - `OnCheckedChangeListener` 리스너: 체크박스에 체크 또는 언체크 이벤트 발생시 액션을 넣을 수 있다.



# 스위치, 토글 버튼, 라이디오 버튼, 라디오 그룹

## Switch와 ToggleButton의 XML 코드

```
1 <Switch  
2     android:checked="true" />  
3 <Switch  
4     android:checked="false" />  
5 <ToggleButton  
6     android:checked="true" />  
7 <ToggleButton  
8     android:checked="false" />
```



## RadioGroup과 RadioButton의 XML 코드

```
1 <RadioGroup  
2     android:id="@+id/rGroup1" />  
3     <RadioButton  
4         android:text="남성" />  
5     <RadioButton  
6         android:text="여성" />  
7 </RadioGroup>
```



- 라디오 버튼은 라디오 그룹과 함께 사용해야 중복성을 제거할 수 있다.
- clearCheck(): 해당 라디오 그룹안에 체크된 것을 모두 해제

# Switch 와 Toggle 버튼



Application name: [SwitchAndToggle](#)

Company Domain: admid.example.com

Project location: [C:\Android\StdWork\SwitchAndToggle](#)

Target Android Devices

- Phone and Tabet

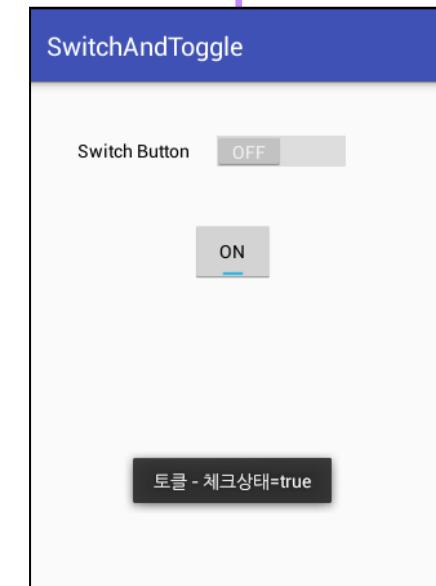
- Minimun SDK API 15 : Android 4.0.3

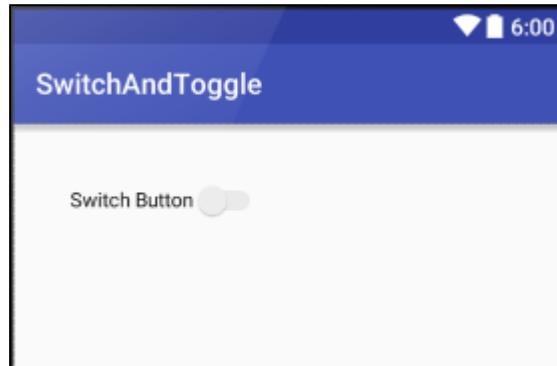
Add an activity to Mobile : [Empty Activity](#)

Customize the Activity

Activity Name: [MainActivity](#)

Layout Name: [activity\\_main](#)





activity\_main.xml x

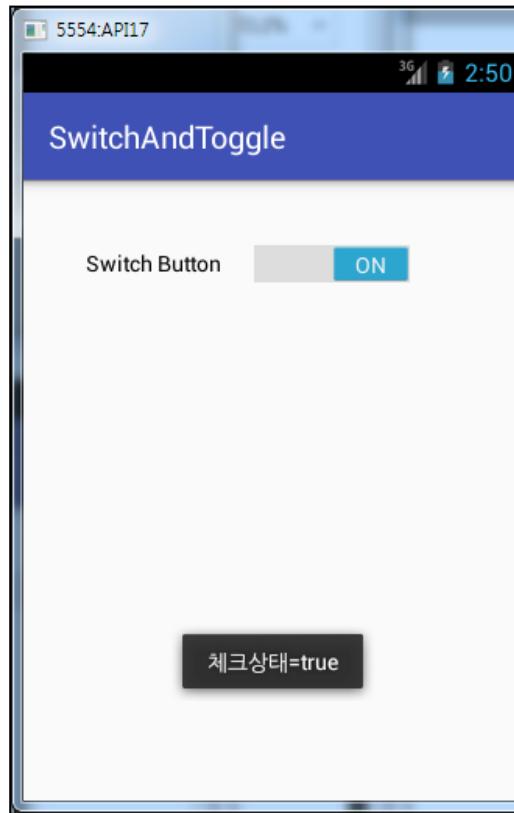
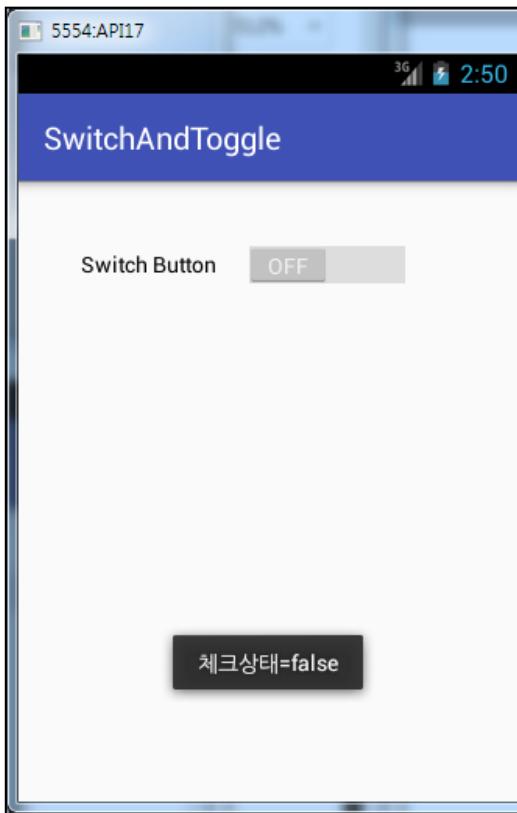
코딩

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:tools="http://schemas.android.com/tools"
4     android:layout_width="match_parent"
5     android:layout_height="match_parent"
6     android:orientation="vertical">
7
8     <Switch
9         android:id="@+id/switch1"
10        android:layout_width="wrap_content"
11        android:layout_height="wrap_content"
12        android:layout_margin="40dp"
13        android:text="Switch Button" />
14 </LinearLayout>
```

## MainActivity.java

```
1 package com.example.admin.switchandtoggle;
2
3 import ...
4
5
6 public class MainActivity extends AppCompatActivity {
7
8     @Override
9     protected void onCreate(Bundle savedInstanceState) {
10         super.onCreate(savedInstanceState);
11         setContentView(R.layout.activity_main);
12
13         Switch swt = (Switch) findViewById(R.id.switch1);
14
15         swt.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {
16             @Override
17             public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {
18                 Toast.makeText(getApplicationContext(),
19                     "체크상태=" + isChecked, Toast.LENGTH_SHORT).show();
20             }
21         });
22     }
23 }
24 }
```

코딩



```
activity_main.xml <?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <Switch
        android:id="@+id/switch1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="40dp"
        android:text="Switch Button" />

    <ToggleButton
        android:id="@+id/toggleButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center_horizontal"
        android:text="Toggle Button" />

</LinearLayout>
```

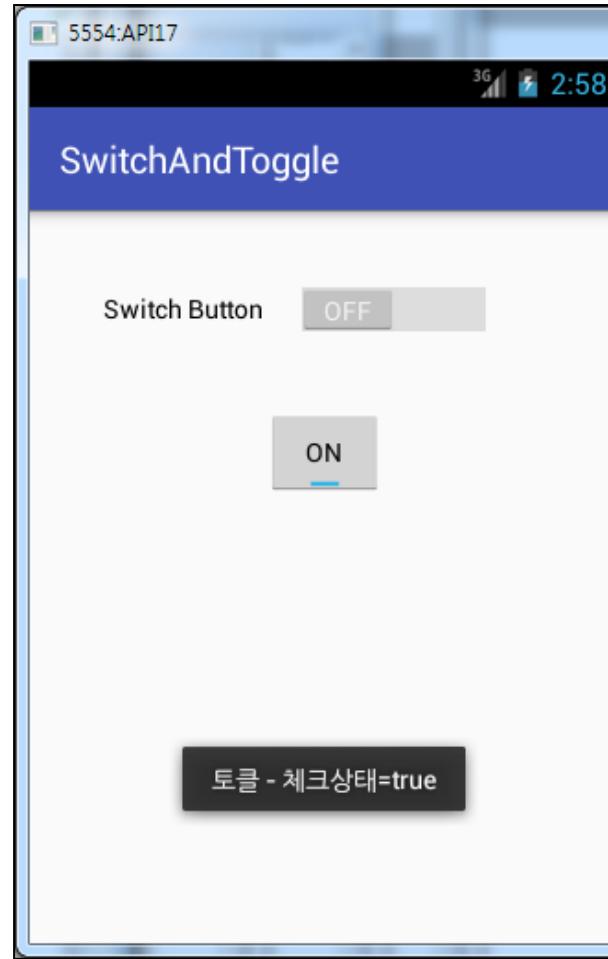
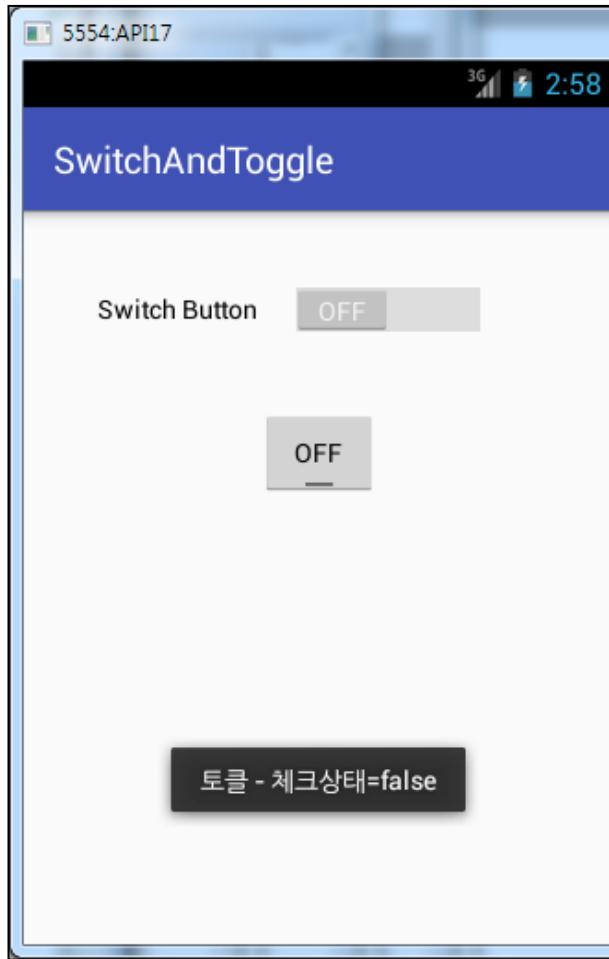
추가



## MainActivity.java ×

```
1 package com.example.admin.switchandtoggle;
2
3 import ...
4
5
6 public class MainActivity extends AppCompatActivity {
7
8     @Override
9
10    protected void onCreate(Bundle savedInstanceState) {
11        super.onCreate(savedInstanceState);
12        setContentView(R.layout.activity_main);
13
14
15
16
17        Switch swt = (Switch) findViewById(R.id.switch1);
18        ToggleButton toggleButton = (ToggleButton) findViewById(R.id.toggleButton);
19
20        toggleButton.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {
21            @Override
22            public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {
23                Toast.makeText(getApplicationContext(),
24                    "토글 - 체크상태=" + isChecked, Toast.LENGTH_SHORT).show();
25            }
26        });
27
28        swt.setOnCheckedChangeListener((buttonView, isChecked) -> {
29            Toast.makeText(getApplicationContext(),
30                "체크상태=" + isChecked, Toast.LENGTH_SHORT).show();
31
32        });
33
34    }
35
36 }
```

코딩



# Radio 버튼



Application name: **RadioButton**

Company Domain: admid.example.com

Project location: C:\Android\StdWork\RadioButton

Target Android Devices

- Phone and Tabet

- Minimun SDK API 15 : Android 4.0.3

Add an activity to Mobile : **Empty Activity**

Customize the Activity

Activity Name: **MainActivity**

Layout Name: **activity\_main**



```
activity_main.xml x  
1 <?xml version="1.0" encoding="utf-8"?>  
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
3     xmlns:tools="http://schemas.android.com/tools"  
4     android:layout_width="match_parent"  
5     android:layout_height="match_parent"  
6     android:orientation="vertical"  
7     android:padding="20dp">  
8  
9     <TextView  
10        android:layout_width="match_parent"  
11        android:layout_height="wrap_content"  
12        android:text="성별을 체크 하세요."  
13        android:textColor="#FF00FF"  
14        android:textSize="30dp" />  
15  
16     <RadioGroup
```

1. 코딩



```
activity_main.xml < />
14     android:textSize="30dp" />
15
16 <RadioGroup
17     android:id="@+id/radioGroup"
18     android:layout_width="wrap_content"
19     android:layout_height="wrap_content"
20     android:orientation="vertical">
21
22     <RadioButton
23         android:id="@+id radioButton1"
24         android:layout_width="wrap_content"
25         android:layout_height="wrap_content"
26         android:layout_margin="20dp"
27         android:checked="true"
28         android:text="남성"
29         android:textColor="#0000FF"
30         android:textSize="30dp" />
31
32     <RadioButton
33         android:id="@+id radioButton2"
34         android:layout_width="wrap_content"
35         android:layout_height="wrap_content"
36         android:layout_margin="20dp"
37         android:checked="false"
38         android:text="여성"
39         android:textColor="#00FF00"
40         android:textSize="30dp" />
41     </RadioGroup>
42
```

2. 코딩



```
activity_main.xml x
35     android:layout_height="wrap_content"
36     android:layout_margin="20dp"
37     android:checked="false"
38     android:text="여성"
39     android:textColor="#00FF00"
40     android:textSize="30dp" />
41 </RadioGroup>
42
43 <Button
44     android:id="@+id/btn"
45     android:layout_width="wrap_content"
46     android:layout_height="wrap_content"
47     android:text="선택 완료"
48     android:textSize="30dp" />
49 </LinearLayout>
```

3. 코딩



```
>MainActivity.java x  
1 package com.example.admin radiobutton;  
2  
3 import ...  
10  
11 public class MainActivity extends AppCompatActivity {  
12  
13     RadioGroup radioGroup;  
14     RadioButton radioButton1, radioButton2;  
15     Button btn;  
16  
17     @Override  
18     protected void onCreate(Bundle savedInstanceState) {  
19         super.onCreate(savedInstanceState);  
20         setContentView(R.layout.activity_main);  
21  
22         radioGroup = (RadioGroup) findViewById(R.id.radioGroup);  
23  
24         btn = (Button) findViewById(R.id.btn);  
25  
26         btn.setOnClickListener(new View.OnClickListener() {
```

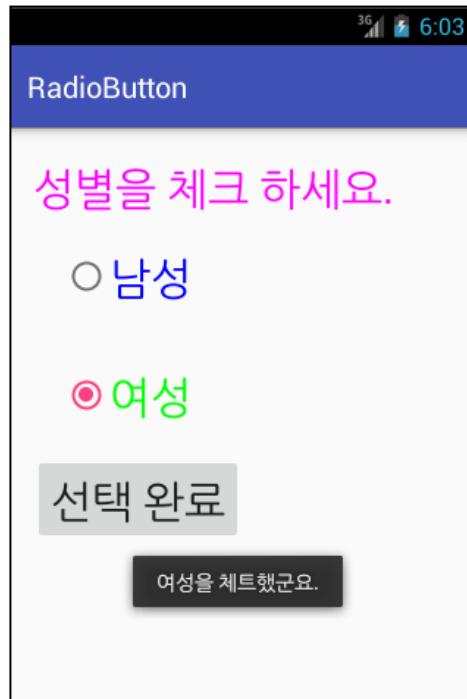
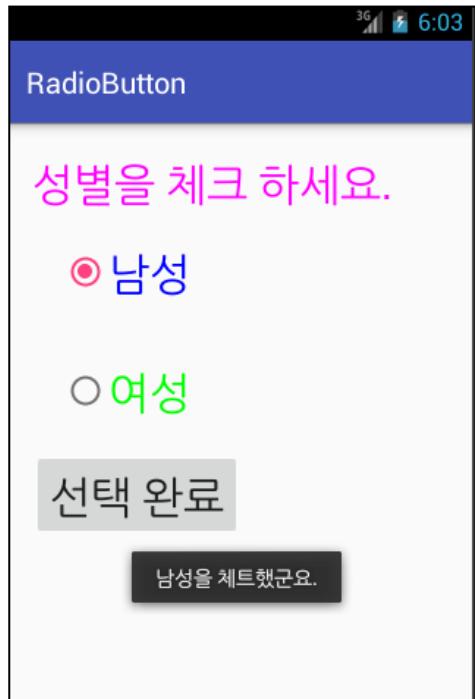
4. 코딩

5. 코딩

## MainActivity.java x

```
16  
17     @Override  
18     protected void onCreate(Bundle savedInstanceState) {  
19         super.onCreate(savedInstanceState);  
20         setContentView(R.layout.activity_main);  
21  
22         radioGroup = (RadioGroup)findViewById(R.id.radioGroup);  
23  
24         btn = (Button)findViewById(R.id.btn);  
25  
26         btn.setOnClickListener(new View.OnClickListener() {  
27             @Override  
28             public void onClick(View v) {  
29                 if(R.id.radioButton1 == radioGroup.getCheckedRadioButtonId()){  
30                     Toast.makeText(getApplicationContext(),  
31                         "남성을 선택했군요.", Toast.LENGTH_SHORT).show();  
32                 }  
33                 if(R.id.radioButton2 == radioGroup.getCheckedRadioButtonId()){  
34                     Toast.makeText(getApplicationContext(),  
35                         "여성을 선택했군요.", Toast.LENGTH_SHORT).show();  
36                 }  
37             }  
38         });  
39     }  
40 }  
41 }
```

6. 코딩



# 체크 박스



Application name: [CheckBox](#)

Company Domain: admid.example.com

Project location: C:\Android\StdWork\CheckBox

Target Android Devices

- Phone and Tabet

- Minimun SDK API 15 : Android 4.0.3

Add an activity to Mobile : [Empty Activity](#)

Customize the Activity

- Activity Name: [MainActivity](#)

- Layout Name: [activity\\_main](#)

매우 좋다.

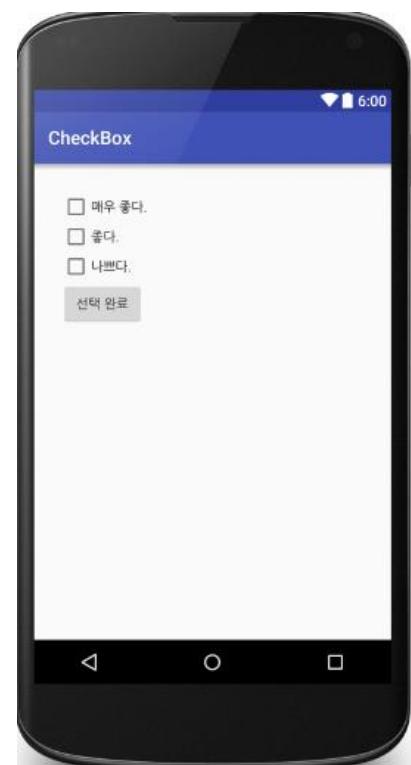
좋다.

나쁘다.



```
activity_main.xml x  
1 <?xml version="1.0" encoding="utf-8"?>  
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
3     xmlns:tools="http://schemas.android.com/tools"  
4     android:layout_width="match_parent"  
5     android:layout_height="match_parent"  
6     android:orientation="vertical"  
7     android:padding="30dp">  
8  
9     <CheckBox  
10        android:id="@+id/checkbox1"  
11        android:layout_width="wrap_content"  
12        android:layout_height="wrap_content"  
13        android:text="매우 좋다." />  
14  
15     <CheckBox  
16        android:id="@+id/checkbox2"  
17        android:layout_width="wrap_content"  
18        android:layout_height="wrap_content"  
19        android:text="좋다." />  
20  
21     <CheckBox
```

코딩



```
activity_main.xml x
13
14
15 <CheckBox
16     android:id="@+id/checkbox2"
17     android:layout_width="wrap_content"
18     android:layout_height="wrap_content"
19     android:text="좋다." />
20
21 <CheckBox
22     android:id="@+id/checkbox3"
23     android:layout_width="wrap_content"
24     android:layout_height="wrap_content"
25     android:text="나쁘다." />
26
27 <Button
28     android:id="@+id/btn"
29     android:layout_width="wrap_content"
30     android:layout_height="wrap_content"
31     android:text="선택 완료" />
32 </LinearLayout>
```

코딩



```
>MainActivity.java x  
1 package com.example.admin.checkbox;  
2  
3 import ...  
4  
5  
6 public class MainActivity extends AppCompatActivity {  
7  
8     CheckBox checkBox1, checkBox2, checkBox3;  
9     Button btn;  
10    String Data;  
11  
12    @Override  
13    protected void onCreate(Bundle savedInstanceState) {  
14        super.onCreate(savedInstanceState);  
15        setContentView(R.layout.activity_main);  
16  
17        btn = (Button) findViewById(R.id.btn);  
18        checkBox1= (CheckBox) findViewById(R.id.checkbox1);  
19        checkBox2= (CheckBox) findViewById(R.id.checkbox2);  
20        checkBox3= (CheckBox) findViewById(R.id.checkbox3);  
21  
22        btn.setOnClickListener(new View.OnClickListener() {  
23            @Override  
24            public void onClick(View v) {  
25                if (checkBox1.isChecked())  
26                    Data = "checkbox1 checked";  
27                else  
28                    Data = "checkbox1 not checked";  
29                if (checkBox2.isChecked())  
30                    Data = Data + "checkbox2 checked";  
31                else  
32                    Data = Data + "checkbox2 not checked";  
33                if (checkBox3.isChecked())  
34                    Data = Data + "checkbox3 checked";  
35                else  
36                    Data = Data + "checkbox3 not checked";  
37                Log.d("Data", Data);  
38            }  
39        });  
40    }  
41  
42    @Override  
43    public boolean onCreateOptionsMenu(Menu menu) {  
44        getMenuInflater().inflate(R.menu.menu_main, menu);  
45        return true;  
46    }  
47  
48    @Override  
49    public boolean onOptionsItemSelected(MenuItem item) {  
50        int id = item.getItemId();  
51  
52        if (id == R.id.action_settings)  
53            return true;  
54        return super.onOptionsItemSelected(item);  
55    }  
56}
```

코딩

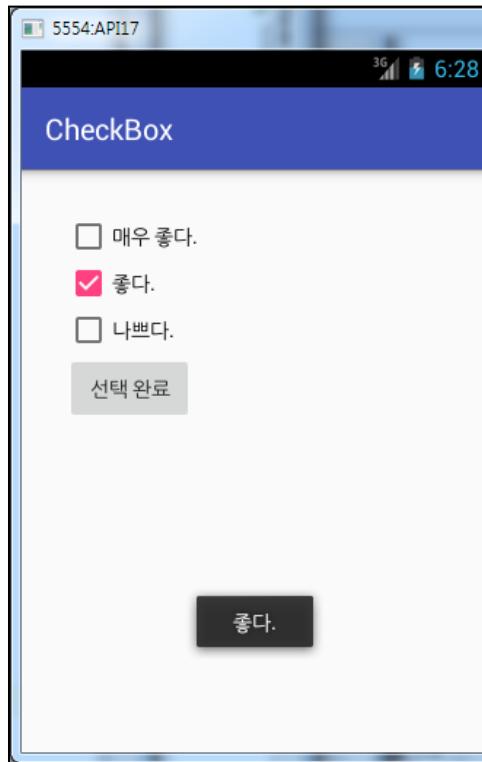
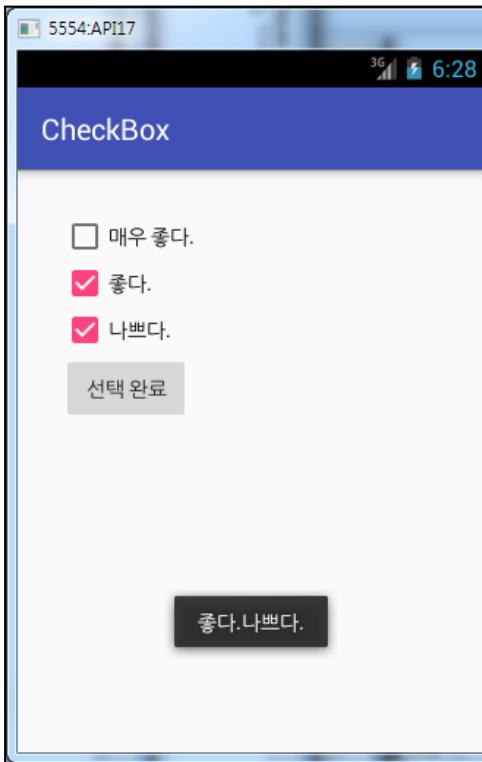
코딩

MainActivity.java

```
22     checkBox1= (CheckBox) findViewById(R.id.checkbox1);
23     checkBox2= (CheckBox) findViewById(R.id.checkbox2);
24     checkBox3= (CheckBox) findViewById(R.id.checkbox3);

25
26     btn.setOnClickListener(new View.OnClickListener() {
27         @Override
28         public void onClick(View v) {
29             Data = "";
30             if(checkBox1.isChecked()){
31                 Data = Data + checkBox1.getText().toString();
32             }
33             if(checkBox2.isChecked()){
34                 Data = Data + checkBox2.getText().toString();
35             }
36             if(checkBox3.isChecked()){
37                 Data = Data + checkBox3.getText().toString();
38             }
39
40             Toast.makeText(getApplicationContext(), Data, Toast.LENGTH_SHORT).show();
41         }
42     });
43 }
44 }
```

코딩



# 예제 실습



Application name: [CheckAnimal](#)

Company Domain: admid.example.com

Project location: C:\Android\StdWork\CheckAnimal

Target Android Devices

- Phone and Tabet

- Minimun SDK API 15 : Android 4.0.3

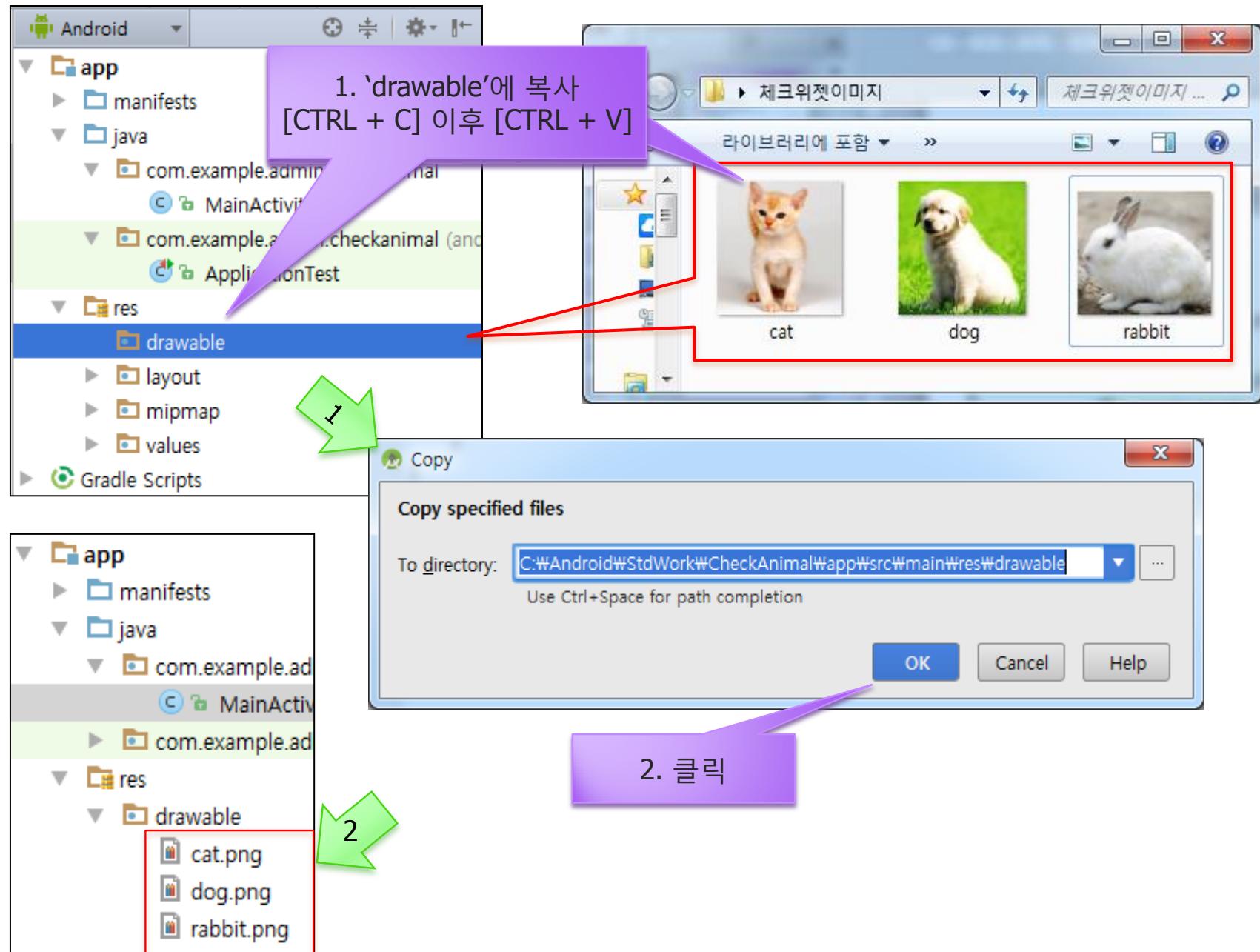
Add an activity to Mobile : [Empty Activity](#)

Customize the Activity

Activity Name: [MainActivity](#)

Layout Name: [activity\\_main](#)





activity\_main.xml \*

```
1 <?xml version="1.0" encoding="utf-8" ?>
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:tools="http://schemas.android.com/tools"
4     android:layout_width="match_parent"
5     android:layout_height="match_parent"
6     android:orientation="vertical"
7     android:padding="20dp">
8
9     <TextView
10        android:id="@+id/Text1"
11        android:layout_width="wrap_content"
12        android:layout_height="wrap_content"
13        android:text="선택을 시작하겠습니까?"
14        android:textSize="20dp" />
15
16     <CheckBox
17        android:id="@+id/ChkAgree"
18        android:layout_width="wrap_content"
19        android:layout_height="wrap_content"
20        android:text="시작" />
21
22     <TextView
23        android:id="@+id/Text2"
24        android:layout_width="wrap_content"
```

## 3. 코딩



activity\_main.xml \*

```

19     android:layout_height="wrap_content"
20         android:text="시작" />
21
22 <TextView
23     android:id="@+id/Text2"
24     android:layout_width="wrap_content"
25     android:layout_height="wrap_content"
26     android:text="좋아하는 애완동물은?"
27     android:textSize="20dp"
28     android:visibility="invisible" />
29
30 <RadioGroup
31     android:id="@+id/Rgroup1"
32     android:layout_width="wrap_content"
33     android:layout_height="wrap_content"
34     android:visibility="invisible">
35
36     <RadioButton
37         android:id="@+id/RdoDog"
38         android:layout_width="wrap_content"
39         android:layout_height="wrap_content"
40         android:text="강아지" />
41
42     <RadioButton
43         android:id="@+id/RdoCat"

```

#### 4. 코딩

보이지 않게 설정

보이지 않게 설정



```

40 <LinearLayout
41     android:layout_width="match_parent"
42     android:layout_height="wrap_content">
43         <RadioGroup
44             android:layout_width="wrap_content"
45             android:layout_height="wrap_content">
46                 <RadioButton
47                     android:id="@+id/RdoCat"
48                     android:layout_width="wrap_content"
49                     android:layout_height="wrap_content"
50                     android:text="고양이" />
51
52                 <RadioButton
53                     android:id="@+id/RdoRabbit"
54                     android:layout_width="wrap_content"
55                     android:layout_height="wrap_content"
56                     android:text="토끼" />
57             </RadioGroup>
58
59             <Button
60                 android:id="@+id/BtnOK"
61                 android:layout_width="wrap_content"
62                 android:layout_height="wrap_content"
63                 android:text="선택완료"
64                 android:visibility="invisible" />
65
66             <ImageView
67                 android:id="@+id/ImgPet"
68                 android:layout_width="wrap_content"
69                 android:layout_height="wrap_content"
70                 android:visibility="invisible" />
71         </LinearLayout>

```

5. 코딩



보이지 않게 설정

MainActivity.java \*

```
1 package com.example.admin.checkanimal;  
2  
3 import android.os.Bundle;  
4 import android.support.v7.app.AppCompatActivity;  
5 import android.view.View;  
6 import android.widget.Button;  
7 import android.widget.CheckBox;  
8 import android.widget.CompoundButton;  
9 import android.widget.ImageView;  
10 import android.widget.RadioButton;  
11 import android.widget.RadioGroup;  
12 import android.widget.TextView;  
13 import android.widget.Toast;  
14
```

6. 추후 Import  
확인

MainActivity.java \*

```
15 public class MainActivity extends AppCompatActivity {  
16  
17     TextView text1, text2;  
18     CheckBox chkAgree;  
19     RadioGroup rGroup1;  
20     RadioButton rdoDog, rdoCat, rdoRabbit;  
21     Button btnOK;  
22     ImageView imgPet;  
23  
24     @Override  
25     protected void onCreate(Bundle savedInstanceState) {
```

7. 코딩

## MainActivity.java \*

```
24     @Override  
25     protected void onCreate(Bundle savedInstanceState) {  
26         super.onCreate(savedInstanceState);  
27         setContentView(R.layout.activity_main);  
28         setTitle("애완동물 사진 보기");  
29  
30         text1 = (TextView)findViewById(R.id.Text1);  
31         text2 = (TextView)findViewById(R.id.Text2);  
32         chkAgree = (CheckBox)findViewById(R.id.ChkAgree);  
33  
34         rGroup1 = (RadioGroup)findViewById(R.id.Rgroup1);  
35         rdoDog = (RadioButton)findViewById(R.id.RdoDog);  
36         rdoCat = (RadioButton)findViewById(R.id.RdoCat);  
37         rdoRabbit = (RadioButton)findViewById(R.id.RdoRabbit);  
38  
39         btnOK = (Button)findViewById(R.id.BtnOK);  
40         imgPet = (ImageView)findViewById(R.id.ImgPet);  
41  
42         chkAgree.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {
```

7. 코딩

'시작' 체크박스를 체크/언체크할 때마다 작동하는 리스너를 onCreate()안에 정의

MainActivity.java \*

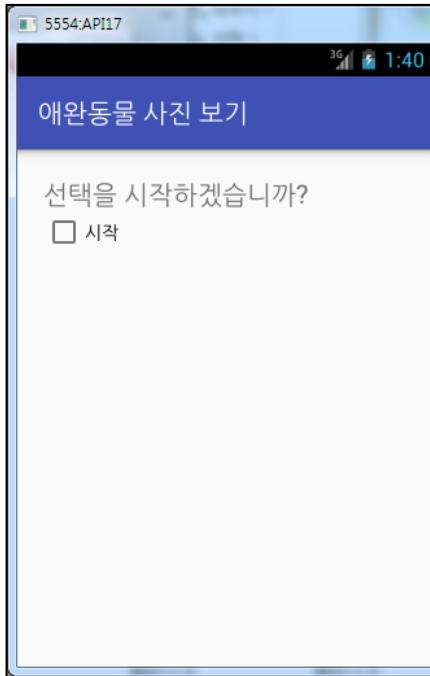
8. 코딩

```
40     imgPet = (ImageView)findViewById(R.id.ImgPet);  
41  
42     chkAgree.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {  
43         @Override  
44         public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {  
45             if(chkAgree.isChecked() == true){  
46                 text2.setVisibility(View.VISIBLE);  
47                 rGroup1.setVisibility(View.VISIBLE);  
48                 btnOK.setVisibility(View.VISIBLE);  
49                 imgPet.setVisibility(View.VISIBLE);  
50             }else{  
51                 text2.setVisibility(View.INVISIBLE);  
52                 rGroup1.setVisibility(View.INVISIBLE);  
53                 btnOK.setVisibility(View.INVISIBLE);  
54                 imgPet.setVisibility(View.INVISIBLE);  
55             }  
56         }  
57     });  
58     btnOK.setOnClickListener(new View.OnClickListener() {
```

## MainActivity.java \*

```
55     }
56 }
57 });
58 btnOK.setOnClickListener(new View.OnClickListener() {
59     @Override
60     public void onClick(View v) {
61         switch (rGroup1.getCheckedRadioButtonId()){
62             case R.id.RdoDog:
63                 imgPet.setImageResource(R.drawable.dog);
64                 break;
65             case R.id.RdoCat:
66                 imgPet.setImageResource(R.drawable.cat);
67                 break;
68             case R.id.RdoRabbit:
69                 imgPet.setImageResource(R.drawable.rabbit);
70                 break;
71             default:
72                 Toast.makeText(getApplicationContext(),
73                     "동물 먼저 선택하세요.", Toast.LENGTH_SHORT).show();
74             }
75         }
76     });
77 }
78 }
```

9. 코딩



# 터치 이벤트

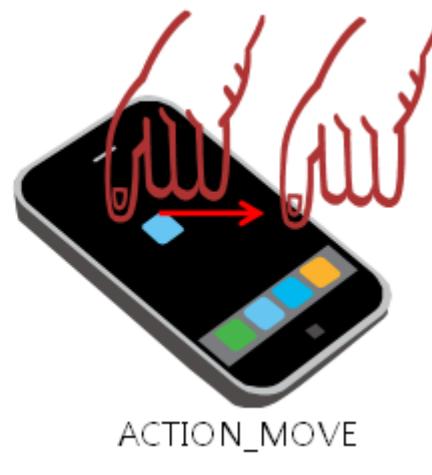
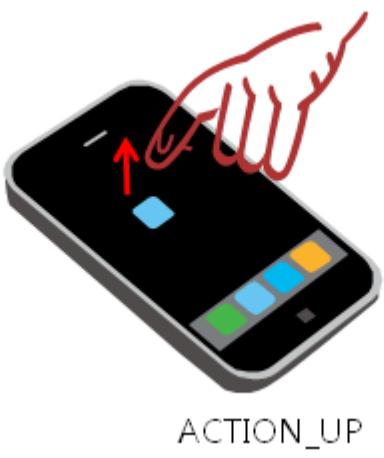
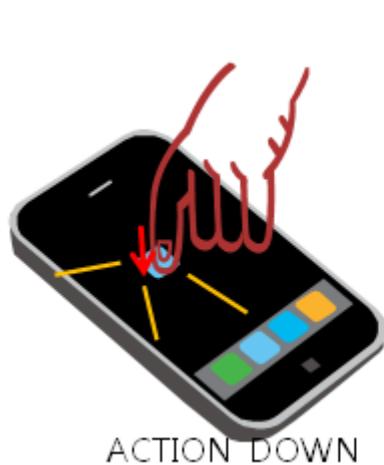


- 콜백 메소드 재정의
  - ◎ Boolean onTouchEvent(MotionEvent e)를 재정의
- 리스너 객체 등록
  - ◎ 인터페이스 onTouchEventListener 안에 Boolean onTouch(View v, MotionEvent e)를 정의
- 콜백 메소드 onTouchEvent()를 통하여 전달되는 MotionEvent 객체에는 액션 코드와 좌표가 들어 있다.
- MotionEvent 의 getAction() 메소드는 터치 동작에 대한 정보를 반환



## MotionEvent 의 getAction() 메소드는 터치 동작에 대한 정보를 반환

액션	설명
ACTION_DOWN	누르는 동작이 시작됨
ACTION_UP	누르고 있다가 떼 때 발생함
ACTION_MOVE	누르는 도중에 움직임
ACTION_CANCEL	터치 동작이 취소됨
ACTION_OUTSIDE	터치가 현재의 위젯을 벗어남



# 프로젝트 생성



Application name: [ExTouch](#)

Company Domain: [admid.example.com](#)

Project location: [C:\Android\StdWork\ExTouch](#)

Target Android Devices

- [Phone and Tabet](#)

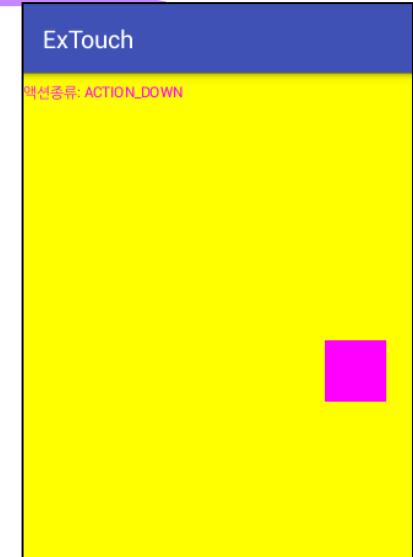
- [Minimun SDK API 15 : Android 4.0.3](#)

Add an activity to Mobile : [Empty Activity](#)

Customize the Activity

- Activity Name: [MainActivity](#)

- Layout Name: [activity\\_main](#)



## C MainActivity.java \*

```
1 package com.example.admin.extouch;
2
3 import android.content.Context;
4 import android.graphics.Color;
5 import android.os.Bundle;
6 import android.support.v7.app.AppCompatActivity;
7 import android.view.View;
8
9 public class MainActivity extends AppCompatActivity {
10
11     protected class MyView extends View {
12         int x = 100, y = 100;
13         String str;
14         public MyView(Context context){
15             super(context);
16             setBackgroundColor(Color.YELLOW);
17         }
18     }
19
20     @Override
21     protected void onCreate(Bundle savedInstanceState) {
22         super.onCreate(savedInstanceState);
23         setContentView(R.layout.activity_main);
24     }
25 }
```

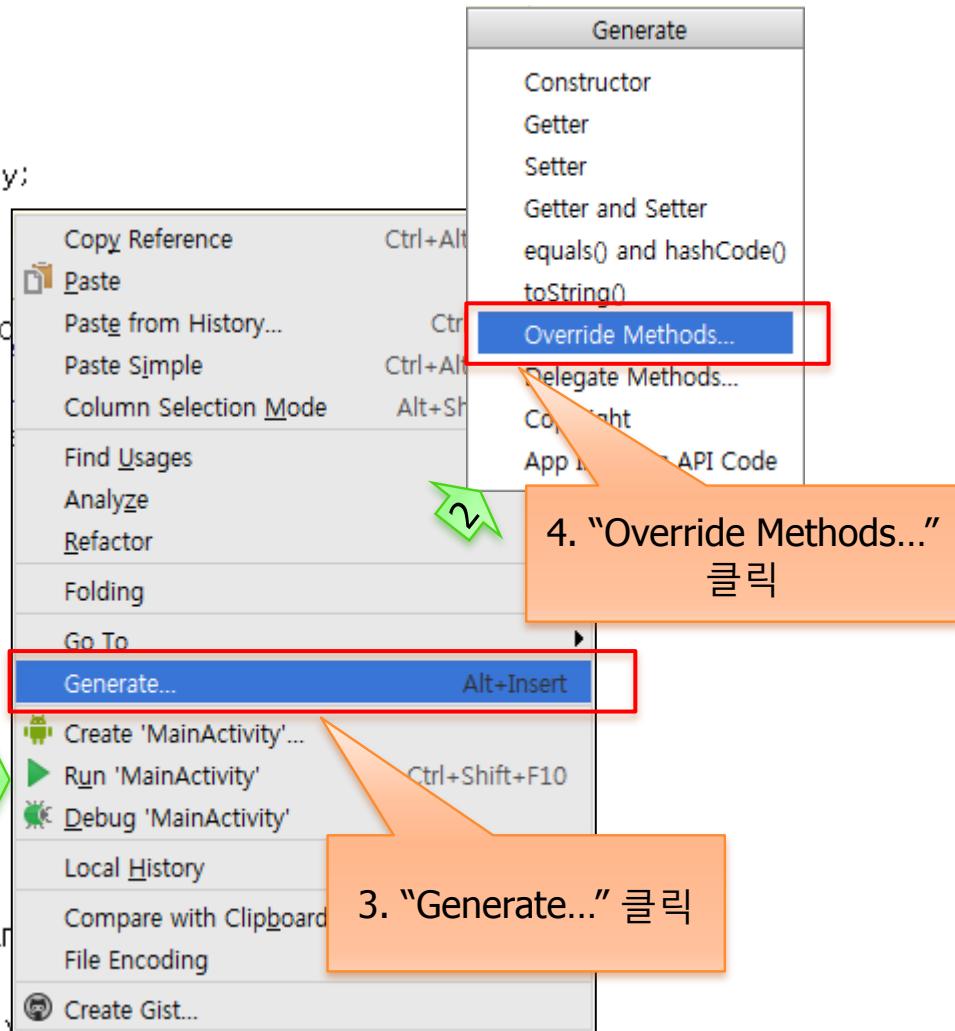
1. 코딩

MainActivity.java \*

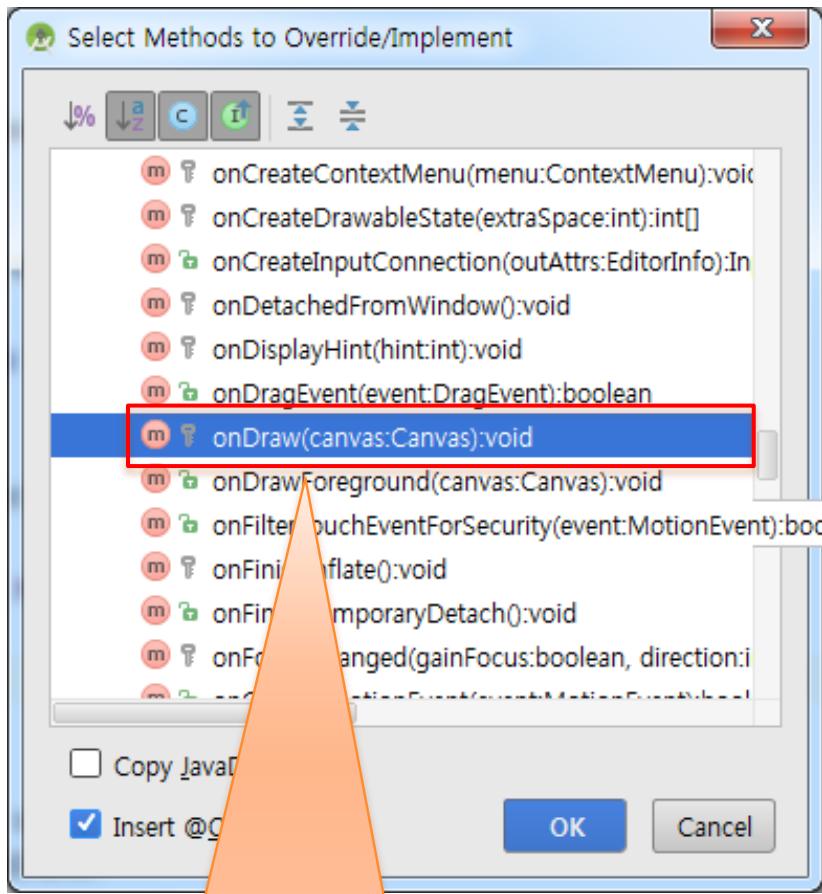
```

1 package com.example.admin.extouch;
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4 import android.graphics.Color;
5 import android.os.Bundle;
6 import android.support.v7.app.AppCompatActivity;
7 import android.view.View;
8
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24 }

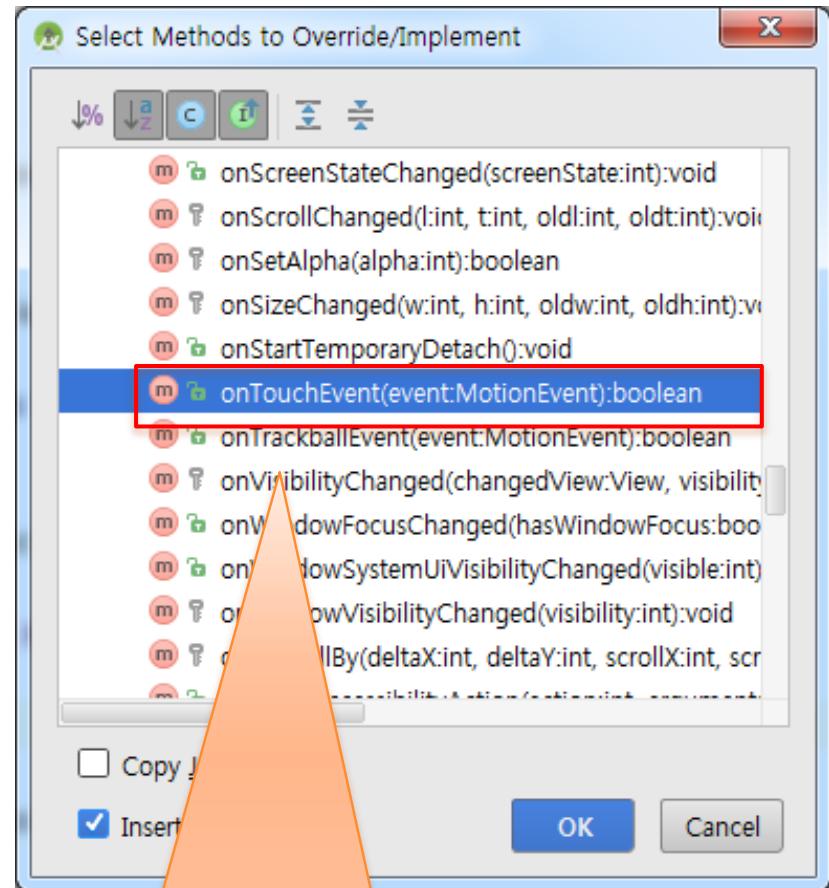
```



# Override Methods 를 추가



5. “onDraw(canvas:Canvas):void” 클릭하여 메소드 추가



6. “onTouchEvent(event:MotionEvent):boolean” 클릭하여 메소드 추가

## MainActivity.java x

```
19         setBackgroundColor(Color.YELLOW);
20     }
21
22     @Override
23     public boolean onTouchEvent(MotionEvent event) {
24         x = (int)event.getX();
25         y = (int)event.getY();
26
27         if(event.getAction() == MotionEvent.ACTION_DOWN)
28             str = "ACTION_DOWN";
29         if(event.getAction() == MotionEvent.ACTION_MOVE)
30             str = "ACTION_MOVE";
31         if(event.getAction() == MotionEvent.ACTION_UP)
32             str = "ACTION_UP";
33         invalidate();
34         return true;
35     }
36
37     @Override
38     protected void onDraw(Canvas canvas) {
```

7. 코딩

## MainActivity.java \*

```
35     }
36
37     @Override
38     protected void onDraw(Canvas canvas) {
39         super.onDraw(canvas);
40         Paint paint = new Paint();
41         paint.setColor(Color.MAGENTA);
42         canvas.drawRect(x, y, x + 50, y + 50, paint);
43         canvas.drawText("액션종류: " + str, 0, 20, paint);
44     }
45
46     @Override
47     protected void onCreate(Bundle savedInstanceState) {
48         super.onCreate(savedInstanceState);
49         MyView w = new MyView(this);
50         setContentView(w);
51     }
52 }
```

8. 코딩

9. 코딩 및 수정

